ANNEX K

FIRE AND RESCUE

K.1 PURPOSE

This Annex provides information concerning the NASA LaRC Fire Protection Program and its capabilities.

K.2 CONCEPT OF OPERATIONS

K.2.1 Fire Protection Program Administration

LaRC's success in reducing the risk or incidence of fire is attributed to the implementation of and commitment to a comprehensive fire protection program. The LaRC Fire Protection Program is comprised of the following five elements:

- Fire Protection Program Administration
- Fire Protection and Life Safety Engineering
- Fire Systems Inspection, Testing and Maintenance
- Fire, Rescue, and Emergency Medical Services
- Emergency Communications

Fire Protection Program Administration is the responsibility of the LaRC Fire Chief who is also designated as the Center's "authority having jurisdiction" (AHJ). The Fire Chief provides senior level management to ensure that all elements of the LaRC Fire Protection Program are in place and maintained in accordance with prescribed fire protection and prevention criteria.

Duties of the Fire Chief include:

- Establishment of LaRC fire protection policy
- Operational command of emergency preparedness incidents
- Administration and oversight of Fire Protection Engineering Program
- Supervision of fire suppression, hazardous materials, and emergency medical services activities
- Establishment of mutual aid agreements
- Direction of fire systems inspection, testing, and maintenance program
- Investigation of fires and protection of evidence
- Inspection of construction and/or demolition sites for compliance with applicable fire codes and standards
- Establishment and issuance of permits, certificates, notices, approvals, and orders pertaining to fire protection and prevention matters

- Review of all response calls (after the fact) to ensure timeliness and adequacy of procedures used in the spirit of continuous improvement.

The LaRC Fire Chief ensures that all fire department activities are performed in the safest manner possible so as to not subject firefighters to undue risk. The Chief provides continuous oversight to all fire department programs including making sure that the necessary equipment, apparatus, personnel, and training are available for the efficient and effective operation of the LaRC Fire Department. The LaRC Fire Chief responds to Center emergencies during normal working hours and as necessary during evening hours, weekends, and holidays, as well as coordinating the efforts of the fire department with facility management and other site experts.

K.2.2 Fire Protection And Life Safety Engineering

Fire Protection Engineer (contractor) provides fire protection and life safety engineering services for all types, sizes, and hazard levels of facilities at LaRC. This service is provided under contract with the Office of Safety and Facility Assurance with Fire Chief direct oversight. The FPE provides the following range of services to the NASA LaRC:

- Facility Surveys
- Drawing and Specification Reviews
- Fire and Building Code Compliance Evaluations
- Computer Fire Modeling
- Fire Safety System Evaluations
- Time Exit Analysis
- Accessibility Planning
- Fire Hazards Analysis
- Baseline Needs Assessments
- Code Equivalency and Exemption Statements
- Fire Sprinkler System Design

The FPE provides an important service by ensuring that the Center is in compliance with all applicable regulatory requirements and industry standards.

K.2.3 Fire, Rescue, And Emergency Medical Services

The LaRC Fire Department (Hampton Fire Department Station No. 8) provides coverage for the entire 808 acres that comprise LaRC as well as areas of the City of Hampton adjacent to the Center. With the exception of Engine No. 8, all fire apparatus and the Fire Station are owned by NASA. All emergency response personnel are employees of the City of Hampton Fire Department.

The LaRC Fire Department is responsible for fire suppression, hazardous materials response, emergency medical response, and special rescue support activities. They are on duty 24-hours a day, 7-days a week and use a 3-platoon work schedule whereby one platoon is on duty for 24-hours at a time. One fire officer (captain or lieutenant), two advanced life support-qualified (ALS) firefighters (Medics), plus three additional firefighters staff each platoon.

The LaRC Fire Department maintains a total of seven emergency response vehicles (apparatus), providing diverse capabilities. Some emergency apparatus are specially equipped to control situations unique to LaRC. The vehicles are described below.

Engine No. 8
City of Hampton-owned 1984 Ford with body by Emergency One. This engine is a 1000 GPM Class A pumper and carries 500 gallons of water. This apparatus provides first-due response to all fires and is equipped to conduct offensive fire suppression operations.

Truck No. 8
NASA-owned 1980 Seagrave ladder truck with 100-ft. rear-mount aerial. This apparatus provides first-due response to all fire and rescue calls and is capable of performing master stream operations, high-angle rescue, structural ventilation, and defensive HAZMAT operations.

Medic No. 8
NASA-owned Ford truck with Type III ambulance body by Wheel Coach. This unit is a State-certified ALS ambulance and provides first-due response on all emergency medical incidents. Medic No. 8 is fully equipped, including drugs and specialized equipment for cardiac emergencies.

Engine No. 801
NASA-owned 1979 Ford truck with body by Pierce. This engine is a 1000 GPM Class A pumper and carries 500 gallons of water and 100 gallons of foam concentrate. This apparatus is setup with a front-mounted, remote-controlled turret foam nozzle in order to provide for rapid foam application on incidents involving flammable liquids. Engine No. 802 is also utilized as a supply pumper that can lay large diameter hose lines and shuttle water from street hydrants to Engine No. 8 or Truck No. 8 as necessary.

Engine No. 802(retired)
NASA-owned 1987 Ford truck with body by Precision Industries. This engine is a 1000 GPM pumper and carries 500 gallons of water. This apparatus is utilized as a reserve fire pumper should Engine No. 8 or Engine No. 801 develop mechanical problems requiring them to be taken out of service for repair.

The following table depicts the current distribution of personnel assigned to apparatus.

Personnel Distribution on Apparatus	
Apparatus	**Number of People**
Engine No. 8	2
Truck No. 8	2
Medic No. 8	2
Engine No. 802	*
Rescue No. 8	**
Ambulance No. 801	**
Engine No. 801	**
Tech No. 8	**

* Response as required by pre-fire plans
** Response by request only

Mutual Aid Response
LaRC participates in mutual aid agreements with surrounding fire departments and agencies. These include departments in the cities of Hampton, Poquoson, and Newport News, and with York County and Langley Air Force Base. Through these agreements, LaRC responds to requests for assistance in all types of emergencies such as structural fires, wildland/urban interface fires, emergency medical calls, and similar incidents that tax the resources of our neighbors.

Requests for mutual aid range from Medic runs to commercial structural fires. Mutual aid agreements are a tremendous benefit to the Center, as responses to these incidents help our firefighters improve their skills during actual emergencies. Mutual aid also provides LaRC with considerable resources should the need arise, strengthening the emergency response capability of the Department.

Training Activities
A continuous training program is utilized that encompasses such activities as basic firefighting, fire pre-planning, and orientation of special risks unique to LaRC. Specialized training such as high angle rescue, trench rescue, confined space rescue, building collapse rescue, and HAZMAT operations are also conducted throughout the year. All emergency response personnel are cross-trained to provide the greatest operational flexibility and quality of service. A daily inspection of apparatus and equipment is a part of the work routine to ensure a ready response condition.

Emergency Medical Response
In order to provide the best emergency medical care possible, a minimum of two State-certified Medics are on duty at all times at the LaRC Fire Department. These Medics man Medic No. 8, which is a State-certified ALS ambulance capable of

handling a wide range of medical problems including those involving cardiac or trauma situations. With cardiac cases, the first five to six minutes are critical and having on-site emergency medical services allows for early intervention and treatment not otherwise possible. An engine company is available to lend support when extra manpower is warranted.

Site ambulances participate in the same mutual aid agreements with surrounding jurisdictions, as do the fire suppression forces. Through these agreements, crews may respond to incidents off-site after normal hours of LaRC operation. In return, surrounding departments will supply ambulances and crews should we experience a large-scale emergency.

HAZMAT Response

Fire Department personnel are state-certified in hazardous materials (HAZMAT) response and stand ready to initiate defensive tactics on any such emergencies at LaRC. They are trained and qualified to the Operations Level as defined by OSHA 29CFR1910.120 Subsection (q) and NFPA 471 and 472. Additional training has been attained by many firefighters to the Technician or Specialist levels of qualification. As a part of their HAZMAT training, firefighters are qualified in detection and monitoring of hazardous atmospheres, decontamination of personnel and equipment, and in the medical treatment of exposed and contaminated personnel.

A hazardous materials response vehicle, Rescue No. 8, is housed at the LaRC Fire Department. This vehicle carries a wide range of equipment needed to mitigate HAZMAT events, including diking and absorbent materials, non-sparking tools, monitoring equipment, and many other items. Rescue No. 8 is set up primarily to operate in a defensive mode where the emphasis is placed on limiting the extent of damage or contamination resulting from an incident.

The Newport News Fire Department operates a fully-equipped hazardous materials response team that can be summoned should the circumstances dictate. This team has the capability to initiate offensive or defensive actions to mitigate hazardous material emergencies. It has over-pack equipment, drum-popping tools, various HAZMAT suits, chlorine kits, and the capability to plug leaks from a variety of containers. Its availability to LaRC for mutual aid response is an important component of the Center's Fire Protection Program.

Technical Rescue Response

Truck No. 8 has an assortment of tools, ropes, "Jaws of Life", and other equipment for use in diverse rescue situations. To supplement this equipment, each pumper carries rope rescue equipment and harnesses. All rescue training is conducted to meet NFPA codes and standards and the Virginia Office of Fire Programs criteria.

Incident Command System

LaRC Fire Department uses the nationally recognized Incident Command System (ICS), which was developed by fire departments to ensure proper handling of all types

and sizes of emergencies. The ICS was implemented by the fire service in an effort to coordinate multiple agencies during response to emergency situations, and starts with the first responding crews and can be expanded as needed based on the nature of the emergency. ICS ensures the proper organization will be set up and staffed during an emergency, that specific roles and responsibilities are understood, and that everyone understands the safety concerns and goals associated with the operation.

ICS has been integrated into the management of emergencies at LaRC, with the NASA Fire Chief taking the lead as incident commander, in coordination with the EPO and facility management personnel. The Hampton Fire Department's on-duty battalion chief is available offsite as a backup incident commander during emergencies any time of the day or night.

Response to Fire Alarm Supervisory Signals
Trouble and supervisory signals are generated when the self-monitoring features of fire alarm systems detect a fault and sends a signal to the Emergency Dispatch Office. These alarms should not be confused with nuisance (false) alarms. Nuisance alarms register as fire alarms and receive a full emergency response since they are suspected to be fire alarms until confirmed otherwise. Although trouble and supervisory signals are differentiated from fire signals, they have the potential to conceal or block actual fire alarm signals and can even be initiated by a fire. An immediate investigation is warranted to determine if a fire exists, to reset systems, silence alarms, secure the scene, and initiate corrective action. The LaRC Fire Department is dispatched upon receipt of such trouble signals in order to locate the source of the problem and to take the appropriate actions as the situation dictates.

Response to Mitigate Damage from Fire Systems Discharge
Emergency isolation and stabilization of fire systems are crucial activities and encompass such unplanned events as fire main breaks, frozen sprinkler pipes, and inadvertent activation of automatic fire detection and suppression systems. A quick response is necessary to minimize water damage that could result in the impairment or loss of vital and costly equipment and systems. The LaRC Fire Department responds to such events and is trained and equipped to handle the majority of circumstances encountered.

K.2.4 Emergency Communications

The Emergency Dispatch Office is manned 24 hours per day, 7 days a week and is located within the LaRC Fire Station. From this office, fire crews and security personnel can be dispatched through a computer-aided dispatch system. Dispatchers keep track of all road closures, fire system problems, and confined space entries. This information allows them to update responding fire personnel during emergencies. The office is equipped with the Emergency Alarm Response System (EARS) which monitors the status of all intelligent fire alarm systems and relays important information quickly during an emergency.

All personnel manning the Emergency Dispatch Office have been certified as Emergency Medical Dispatchers. Newly hired dispatchers are required to undergo extensive training, having to work along side certified dispatchers on all three shifts for a period of three weeks. Only when competency has been demonstrated to the satisfaction of the LaRC Fire Chief, will the new dispatcher be allowed to man the Emergency Dispatch Office alone.

Essential reference materials are provided at the Emergency Dispatch Office including special guidebooks and Procedures DY3.4.02 through DY3.4.11. The guidebooks cover the following subject areas:

- Emergency Response Guidebook which details specific response assignments for fire department apparatus and personnel
- Hazardous Materials Notification Guidebook which establishes protocols for the prompt notification of essential personnel in the event of a hazardous materials incident
- Emergency Medical Guidebook which outlines procedures for gathering important medical information when a call is received, and the relaying of potentially life-saving advice during a variety of situations

The status of fire protection systems is constantly monitored by the Emergency Dispatch Office for such parameters as water pressure, A/C power, air pressure, circuit integrity, valve position, water flow, and fire alarms. Numerous projects and work packages executed daily by various LaRC contractors and facility maintenance personnel require deactivations of fire alarm systems from time to time in order to prevent nuisance alarms. It is the duty of the dispatcher to maintain a log of such activities so that information on systems readiness and status is kept current.

K.2.5 Additional Services

Fire fighting personnel are responsible for conducting an annual fire/life safety inspection of each Government facility at NASA LaRC. The inspections are performed during the Government's normal work hours at NASA LaRC. Results and findings are documented and posted within 3 days of the inspection.

Fire fighting personnel conduct a minimum of one fire drill annually for each of the manned NASA LaRC facilities. The fire fighting personnel use these drills to maintain proficiency in their response capability.

Fire fighting personnel maintain prefire planning documentation for each NASA LaRC facility. Such documentation includes general physical layout of all facilities, identification of high hazards, high value equipment, mission critical areas, specialized or unusual instructions, and other pertinent information essential for prefire planning.

Fire fighting personnel verify the acceptability of all facility fire extinguishers, and replace all defective and non-operational units with Government-furnished units.

Fire fighting personnel assist in the annual flow checks of all NASA LaRC fire hydrants.

Fire fighting personnel maintain, repair, and service the station and NASA LaRC self-contained breathing apparatus.

K.2.6 Assumptions

a. Outside assistance with the fire fighting tasks will complement NASA LaRC's own operating system.

b. NASA LaRC's fire fighting systems can, on occasion, be committed to fires or emergency medical situations outside of Center boundaries.

ANNEX L

RADIOLOGICAL DEFENSE

L.1 PURPOSE

This Annex provides for the organized effort necessary to minimize the effects of radiation on the people and resources of LaRC through detection and implementation of preventative and remedial measures.

L.2 SITUATION AND ASSUMPTIONS

L.2.1 Situation

a. Limited radioactive materials are used at LaRC and are transported into, out of, and through the Center. There is a possibility of occurrence of incidents or accidents in the transportation and use of these materials; and while it is unlikely that such events would pose a serious threat to the health and safety of the population, it is necessary to be able to detect radiation, to assess its seriousness, and to take appropriate protective and remedial actions.

b. There are radiation hazards in the local geographic area (e.g. Surry Nuclear Power Plant, the Yorktown Naval Weapons Station, the Newport News Shipyard) that could potentially expose LaRC personnel to dangerous levels of radiation.

L.2.2 Assumptions

a. In the event of a very serious peacetime nuclear accident, LaRC could receive assistance from State and Federal governments and from the nuclear industry, all of whom have highly sophisticated systems to detect radiation, monitor it, and predict its spread.

b. Outside assistance would complement, not supplant, LaRC's own operating systems.

L.3 CONCEPT OF OPERATIONS

L.3.1 General

a. The management of radiological emergencies involves three critical activities: (1) environmental surveillance, (2) personnel exposure control, and (3) protective measures.

b. In a large-scale emergency involving radioactive materials, many elements of local government will be integrated into a coherent Radiological Defense (RADEF) system.

L.3.2 Execution

a. RADEF operations for any large-scale radiological emergency will be directed and controlled from the LaRC EOC.

b. RADEF personnel will collect, analyze, and report radiological information. They will develop projections of hazard levels and areas affected and make recommendations for personnel exposure control, continuing environmental monitoring, and protective measures.

c. The EPO will coordinate, when appropriate, with all municipal departments and agencies to ensure maximum safety for operations personnel.

d. A listing of facilities which routinely use radioactive materials is maintained by the LaRC Radiation Safety Officer.

L.4 ORGANIZATION

The EPO, with support from the Radiation Safety Officer, will direct all RADEF activities.

L.5 ADMINISTRATION AND LOGISTICS

L.5.1 Administration

The RADEF program is administered by the OSFA, OSMA.

ANNEX P

SEARCH AND RESCUE

The NASA LaRC Fire Department has limited search and rescue capabilities which are deployed during emergencies. The Incident Commander will request any additional resources required at the scene. In most cases these resources will come from the regional rescue team.

ANNEX Q

HAZARDOUS MATERIALS RESPONSE

Details for this subject are contained in the Center's Integrated Spill Contingency Plan and supported by LAPG 8800.1, "Environmental Program Manual," Chapter 14. NASA LaRC's capability for Hazardous Materials Response containment and isolation of the accident/incident site. Major accidents/incidents should be reported immediately to the NASA LaRC fire department at 911.

ANNEX T

MEMORANDA OF UNDERSTANDING (MOU'S)/ MEMORANDA OF AGREEMENT (MOA'S)/ JOINT OPERATIONAL PROCEDURES (JOP'S)

See Interservice Support Agreement Number FB4800-87059-017 between NASA LaRC and 1st Fighter Wing, Air Combat Command (ACC), Langley Air Force Base, Virginia.

Return to Title Page